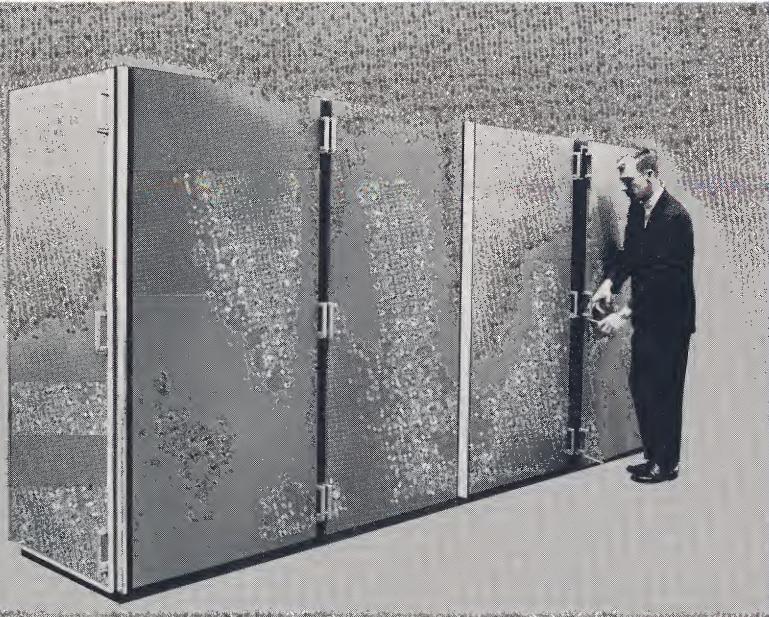




# LIBRASCOPE engineering data



## LIBRAFILE 3800 mass memory

LIBRAFILE 3800 mass memory

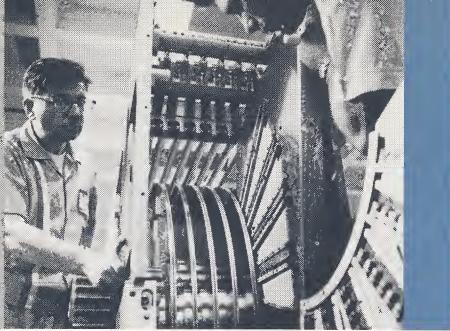
**DESCRIPTION** — LIBRAFILE 3800 mass memories, produced by Librascope Group of General Precision, Inc., are large-capacity, high-speed, random-access information storage systems that can be used with any data processing system, whether already in use or scheduled to be installed in the future.

The memory element consists of six cobalt-coated aluminum discs, 38" in diameter and  $\frac{1}{2}$ " in width, that rotate at 1800 rpm. Both faces are used for storage. All discs are mounted on a common shaft. Each 6-disc file can store approximately 200 million bits of information, depending on the number of heads and the specific data organization. Files can be added as the need arises; any number of files can be combined into a single system (up to 16 on a single trunk line). The memory element is available with or without master-control electronics.

The technique of information retrieval is either fixed-address search, (variable or fixed record size) or search-by-record content, depending on the master-control electronics used. Average access time is 17 milliseconds. Search-by-record content is a General Precision/Librascope technique that permits any desired field to be used as the access key, so that it is not necessary to know *where* the data is stored, but only *what* you wish to find. This obviates the need for a costly flagging and table-look-up program, conserves space in the central processing unit's main-frame memory, and permits simultaneous off-line search.

The LIBRAFILE 3800 mass memory features a "flying-head per track." The read/write heads are mounted on plates interleaved between the discs. They ride on a 0.0001" cushion of air when the discs rotate. The number of heads used depends on the total bit-storage requirements of the particular application.

**APPLICATIONS** — LIBRAFILE 3800 mass memories can be used wherever an extremely large amount of data must be stored, when information retrieval in minimal time is required, or when high transfer rates are desired. General Precision/Librascope disc files are a key part of the AN/FYQ-11 Data Processing Set installed in USAF's 473L command-and-control system in the Air Force Command Post at the Pentagon. More than a million headbar hours have been logged without a single headbar failure. A scheduled installation at the Atomic Energy Commission's Lawrence Radiation Laboratory is typical of many scientific operations that use the disc file system in conjunction with their data processors. It will provide a common base for eight powerful computers, enabling many scientists and engineers to "share" the system on an almost simultaneous basis.



# LIBRAFILE 3800 mass memory

Technicians check LIBRAFILE 3800 disc-memory unit during assembly.

## SPECIFICATIONS FOR A TYPICAL-CONFIGURATION LIBRAFILE 3800 MASS MEMORY

The exact configuration of a LIBRAFILE 3800 mass memory depends on the requirements of the particular application. A typical configuration consists of a 6-disc file, storing 200 million bits; and a controller with the necessary interface, control, and read/write electronics.

### PHYSICAL SPECIFICATIONS

Size of disc-file cabinet:	74 in. wide x 72 in. high x 36 in. deep
Size of electronics cabinet:	64 in. wide x 72 in. high x 36 in. deep
Combined size of cabinets:	138 in. wide x 72 in. high x 36 in. deep
Weight of disc-file cabinet:	2800 lbs.
Weight of electronics cabinet:	1750 lbs.
Combined weight of cabinets:	4550 lbs.

### POWER REQUIREMENTS

Primary power source:	3 phase, 208 volts $\pm 10\%$ phase-to-phase, wye 4-wire, 60 $\pm 2$ cps.
Disc file power:	3.5 KVA; 10 amps/phase
Electronics power:	2.5 KVA; 7 amps/phase
Motor starting:	100 amps/phase (approx.)
15 amp. convenience outlets are provided on the electronics cabinet	

### ENVIRONMENTAL SPECIFICATIONS

Ambient temperature:	+55 to +100° F.
Temperature gradient:	15° F. per hr. max.
Relative humidity:	40 to 80%
Cooling water:	5 gal. per min. (approx.); inlet temperature not to exceed 60° F.

### DISC-FILE UNIT SPECIFICATIONS

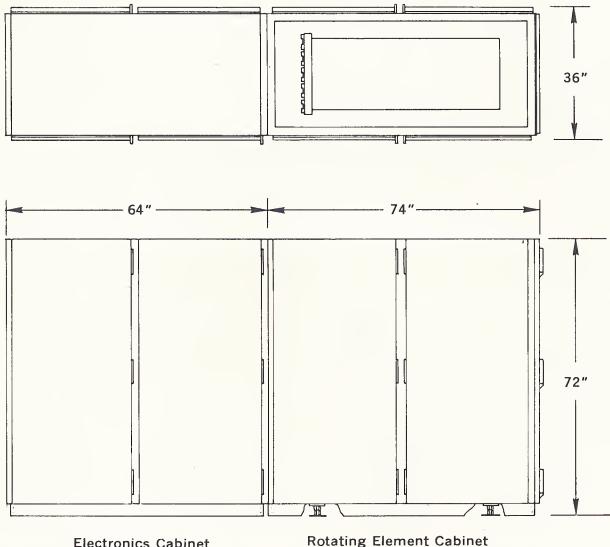
Disc dimensions (6 discs per cabinet):	1/2 in. thick x 37.5 in. dia.
Magnetic media:	Electroless cobalt
Speed:	1800 rpm nominal
Heads:	Fixed: 0.015 in. track width; C.T.; bifilar wound; integral selection diodes; mounted 12 plus 1 spare per bar
Disc mounting:	6 on a common shaft, with drive motor at each end
Drive motors:	Both motors used for start-up. When speed is reached, one may be cut out and used for stand-by

### DISC FILE ORGANIZATION

	Typical Configuration A	Typical Configuration B
Word length:	32 bits (16 x 2)	32 bits (32 x 1)
Tracks/word:	16	32
Bits/track/word:	2	1
Words/sector:	90	180
Data bits/sector:	180	180
Parity:	1 bit	1 bit
Spacer:	1 bit	1 bit
Total bits/sector/track:	182	182
Sectors/revolution:	256	256
Bits/track:	46,592	46,592
Tracks/file:	4,096	4,096
Total bits/file:	approximately 200,000,000	approximately 200,000,000
Spare heads and data tracks/file:	100	100
Clock rate:	1.33 Mc	1.33 Mc
Data transfer rate:	21.28 million bits/sec.*	42.56 million bits/sec.**
Bit density:	710 (approx.)	710 (approx.)
Access time:	35 ms. max. 17 ms. avg.	35 ms. max. 15 ms. avg.
Track width:	0.015 in.	0.015 in.
Track guard:	0.006 in.	0.006 in.
Tracks/in.:	48	48

\*Based on 16-head parallel transfer.

\*\*Based on 32-head parallel transfer.  
Single-head series transfer rate is equal to the clock rate:  
1.33 million bits/sec.



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